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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/910,591	07/20/2001	Daniel E. Lenoski	062986.0211	1404

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EXAMINER

BRAGDON, REGINALD GLENWOOD

ART UNIT	PAPER NUMBER
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2188

6

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

FRL

**Office Action Summary**

Application No.

09/910,591

Applicant(s)

LENOSKI ET AL.

Examiner

Reginald G. Bragdon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5-7,11,15-17,21-25 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 2-4,8-10,12-14,18-20,26 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Objections*

2. Claims 4 and 11-21 are objected to because of the following informalities:

As per claim 4, line 1, "1" should be --2--.

As per claim 4, line 1, "the sharing" should be --each sharing--.

As per claim 11, line 9, "multiple process" should be --multiprocessor--.

As per claim 14, line 1, "11" should be --12--.

As per claim 14, line 1, "the sharing" should be --each sharing--.

As per claim 15, line 1, "1" should be --11--.

As per claim 18, line 1, "1" should be --11--.

As per claim 20, line 5, add --the-- before "identifier".

All dependent claims are objected to as having the same deficiencies as the claims they depend from.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

--or--

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 5-7, 11, 15-17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Blake et al. (5,752,264).

As per claims 1 and 11, Blake et al. teaches a system including a plurality of clusters 214a-214n (“processor coherence domains”), with each cluster including a plurality of CPUs 218 (“processors”) and L1 and L2 cache memory (“processor memory”), the clusters interconnected over a shared memory bus (“system coherence domain”). Blake et al. teaches store operations (Table 4 in column 23) where data is shared among caches in a particular cluster, but is not located in another cluster (“providing shared access to data...only to elements...within the processor coherence domain”). Blake et al. teaches fetch read-only, exclusive, and exclusive conditional accesses (“providing non-shared accesses to data...to elements...within and outside of the processor coherence domain”). See Tables 1-3 in columns 22-23. The read-only, exclusive, and exclusive conditional accesses can occur within a cluster (e.g. operations FRO 1-4, FEX 1-4, and FCE 1-4) or from outside the cluster (e.g. operations FRO 5-10, FEX 5-10, and FCE 5-10).

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As per claims 5 and 15, Blake et al. teaches read-only accesses in Table 1.

As per claims 6 and 16, Blake et al. teaches exclusive accesses in Table 2.

As per claims 7 and 17, Blake et al. teaches exclusive-conditional (i.e. transient) accesses in Table 3.

As per claim 21, Blake et al. teaches a plurality of discrete cache memories as shown in figure 2.

5. Claims 22-25 and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Weber (6,209,064).

As per claims 22 and 27, Weber teaches, with reference to figure 1, that cache coherence is maintained within sites 106 (“processor coherence domain”) by a share everything protocol, where all processors share memory. See column 3, lines 5-9 and 22-32. Between sites 106, coherency is maintained using a “share nothing” protocol, where processors outside the site are not allowed to perform memory access operations on the physical address space of the site. See column 3, lines 13-16 and 35-40. Each node 102 in each site 106 includes a memory 206 (“processor memory”).

Weber teaches a communicating messages between a source node and a receiving node for the purpose of accessing memory (“receiv[ing] a request from an element for shared access to data in a processor memory”). See column 3, lines 56-40. A processor node is able to determine if the message is an message from within the same coherence group (site 106) or from outside the coherence group using node IDs and coherence node numbers (“determin[ing] whether the element is outside of a processor coherence domain of the processor memory”). See column 4, lines 39-43. If the incoming request is from a site outside the receiving site, then the memory

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access request is denied (“deny[ing] the request for shared access if the element is outside of the processor coherence domain of the processor memory”). See column 5, lines 31-36.

Weber teaches that all memory access requests from outside a site are denied. This includes all requests for shared access (as well as exclusive and read-only access). Furthermore, it is noted that a site 106 is represented by processor nodes 102 (see column 3, lines 9-13) with shared physical address space (i.e. shared physical memory; see column 3, lines 34-35). A coherence group shares memory in a site (see column 4, line 66, to column 5, line 1).

As per claims 23 and 28, Weber teaches sending a node ID (NID) (“identifier”) with a request for access. See column 3, lines 51-53. The NID is used to determine if the requesting node is from within the site, or from outside the site. See column 3, lines 53-57, and column 4, lines 36-46.

As per claims 24 and 29, Weber teaches that the received NID is compared to a mapping in the node to determine if the request is from within the site, or from outside the site. See column 4, lines 39-44.

As per claims 25 and 30, Weber teaches that the distinction between NIDs for the various sites lies in the most significant bits of the NID. For example, for site 106d, the nodes have a value of 15x, where “15” (the most significant bits of the NID) would identify the particular site that the node is from. See column 3, lines 48-51.

*Allowable Subject Matter*

6. Claims 2-4, 8-10, 12-14, 18-20, 26, and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kien A. Hua et al., "Interconnecting Shared-Everything Systems for Efficient Parallel Query Processing" teaches hybrid shared-everything and shared-nothing systems.

8. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

All "OFFICIAL" patent application related correspondence transmitted by FAX must be directed to the central FAX number at **(703) 872-9306**:

"INFORMAL" or "DRAFT" FAX communications may be sent to the Examiner at **(703) 746-5693**, only after approval by the Examiner.

Hand-delivered responses should be brought to Crystal Park II, 2121  
Crystal Drive, Arlington, VA., Fourth Floor (receptionist).

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reginald G. Bragdon whose telephone number is (703) 305-3823. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and every other Friday from 7:00 AM to 3:30 PM.

The examiner's supervisor, Mano Padmanabhan, can be reached at (703) 306-2903.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

RGB  
June 25, 2004

*Reginald G. Bragdon*

Reginald G. Bragdon  
Primary Patent Examiner  
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